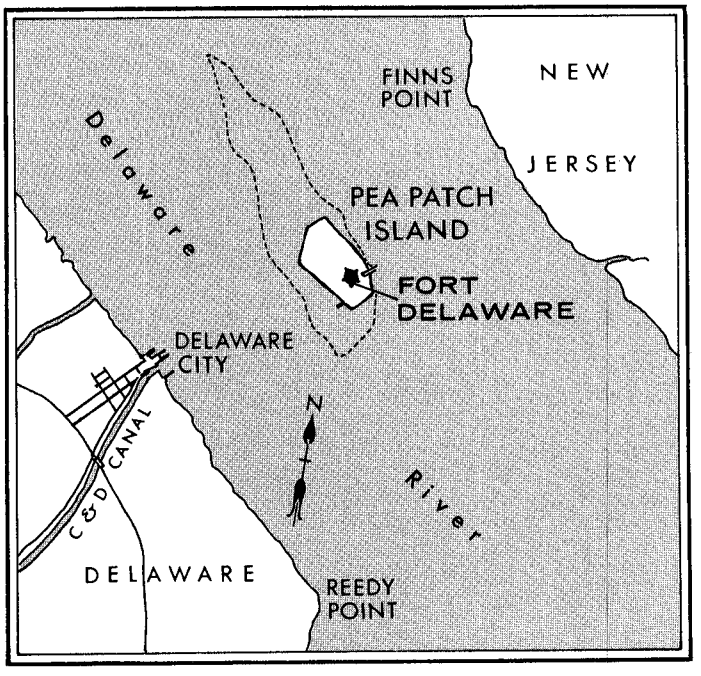
REBUILDING FORT DELAWARE



Pea Patch Island has had many shapes, has always been vulnerable to the alternate scour and shoaling action of the tides and currents. Its meager "fast land"—about 80 acres—was once contained by a stone-revetted dike; in 1863-64 it impounded 12,000 war prisoners, damply, on its "general level three feet below low watermark". Major John Sanders started the building of Fort Delaware in 1848 on "this mud island, upon which there is no stability" and died here ten years later, the work still unfinished.
An eighteenth century legend tells of a vessel laden with peas which foundered and broke apart on a submerged shoal; the cargo sprouted, the vines flourished and collected mud to raise an island — Pea Patch Island.

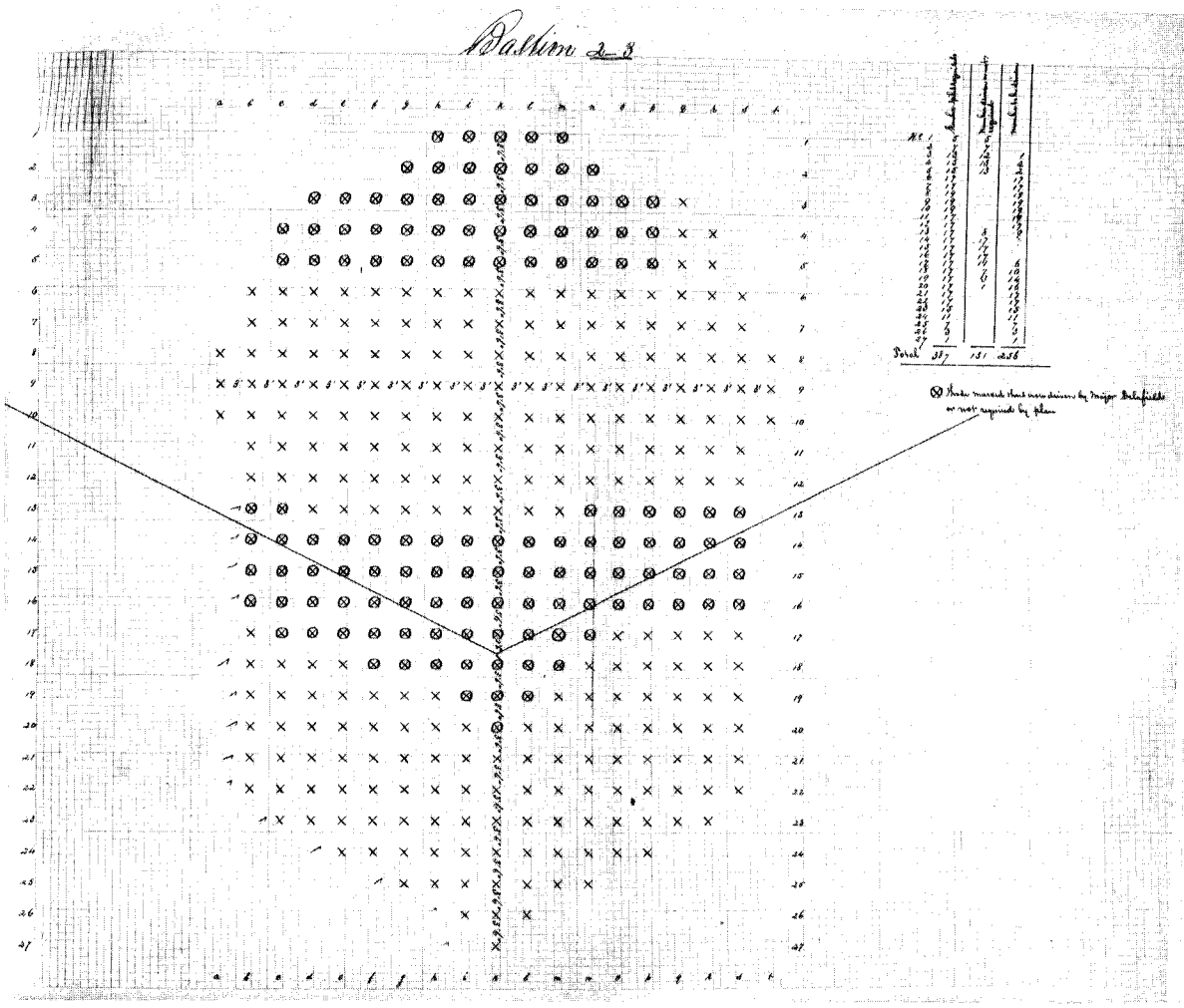
An alluvial mud shoal in Delaware River about a mile from Delaware City is intersected obliquely at its base by very ancient channel tracings of sand and gravel, probably pleistocene. In 1834 the depth of mud over the sand stratum, as determined by borings, was more than forty feet. Before that the shoal had grown to a few feet above mean high tide and was shown on maps as Pea Patch Island.

The compressible mud bank was selected by the War Department as the site for a large modern fort. A structure erected here between 1817 and 1825 by Major Samuel Babcock deteriorated because of inadequate foundations, its walls suffering "great and unequal subsidence;" its destruction was further advanced by fire in 1831. Captain of Engineers, Richard Delafield, was assigned in 1833 to reconstruct Fort Delaware, along with other area duties. In April, Captain Delafield wrote to his Chief, General Gratiot, from Cumberland, Maryland requesting $10,000 to be used for taking down old work and erecting temporary quarters and workshops on Pea Patch Island.

Cumberland was a junction point on the National Road[1] then under construction; the second east of the Ohio River was in Captain Delafield's charge. An Engineer Officer's field assignment in the 1830's covered a variety of duties similar to those of today's District Engineer. Supervision and administration of harbor improvements at New Castle, Chester and Marcus Hook and works at Fort Mifflin were some of the area responsibilities. Before summer of 1833 a work force of 100 men was on Pea Patch Island, employed primarily in razing the remnants of Major Babcock's fort and making protective works around the island against tidal inundations. On 18 April of that year, general order #32, done under the hand of Major General Macomb, declared that the fort on the Pea Patch should thereafter be known as Fort Delaware.[2] The site was visited on 2 July 1833 by a lawyer who demanded a list of the island's tenants. He was declined by Mr. Belin, Captain Delafield's able civilian assistant, but promised on departure that he would return in a few days with a "writ of ejectment." Then began the litigation for ownership of Pea Patch Island be-

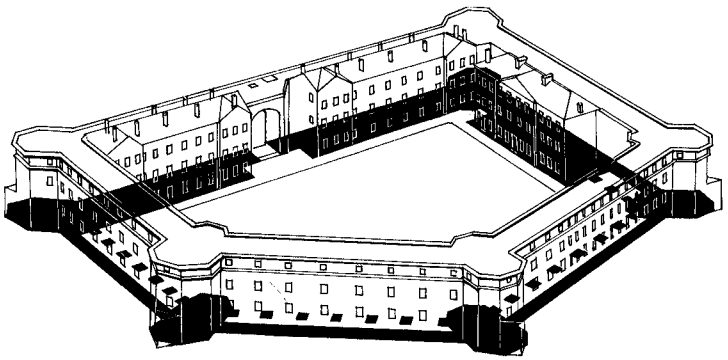
tween the State of Delaware and New Jersey Proprietors. While legal opponents were lining up, work continued at Fort Delaware; 1,095 piles were driven before operations were halted. Large orders for bricks and stone were sent out in July and September of 1836 in anticipation of the imminent completion of the foundation work; grillage timber was ordered in October. But progress was slowed by the singular properties of the Delaware mud. With less than one-fifth of the required piles installed, construction was suspended in 1838 to await settlement of the ownership controversy.

Brevet Major John Sanders was given the assignment of rebuilding Fort Delaware in 1848, following settlement of the drawnout case, which finally awarded proprietorship of Pea Patch Island to Delaware. Graduated second in his class from the Military Academy in 1834, Sanders directed improvements of the Ohio River above Louisville, Kentucky, 1836 - 1841, and served with honor in the Mexican War, participating in the seiges of Vera Cruz and Monterey. For "gallant and meritorious conduct" in the latter engagement, he was promoted to the rank of brevet major. Afflicted with diabetes, which he had



An 1848 status sheet from Major Sanders' log, showing the pile pattern for the bastion between fronts 2 and 3. The encircled piles were driven a decade previously by Major Delafield, according to the old plan. The new plan called for 387 piles, of which 256 remained to be driven.

Federal Records Center, National Archives, Philadelphia.



apparently contracted during the Mexican campaign, Sanders suffered from ill health throughout his long stay on Pea Patch. General Totten[3] charged his new Resident Engineer emphatically with the importance of securing an absolutely reliable foundation for the new construction, now redesigned and intended to be the largest modern fort in the country.

An inventory of materials found on Pea Patch Island as of 1 March 1848 reported considerable deterioration having taken place during the ten years since the project's suspension. The four steam engines required extensive overhaul and replacement of brass and boilers; the grillage timber, lumber and a half-dozen scows were rotted beyond salvage. Forty-two thousand feet of pile timber was mostly usable, as were 1.3 million bricks and 19 thousand tons of stone. Much of this material had to be moved as it was in the way of the new plan of excavation.

Initial diking work began with the construction of a revetted embankment around the periphery of the island for a length of one and one-third miles. For this purpose some stone was bought, with the greater part obtained from the debris of Major Babcock's old masonry. So extensive was the accumulated debris requiring removal that Major Sanders likened the site preparation to rock excavation, the conditions being, however more difficult than on a fresh site. A large work force was kept on through the first winter and excavation for the foundation was completed in April 1849. The pentagonal plan was laid out covering an area of about six acres. Captain Delafield had driven 1,095 piles of an estimated required total of 6,594.

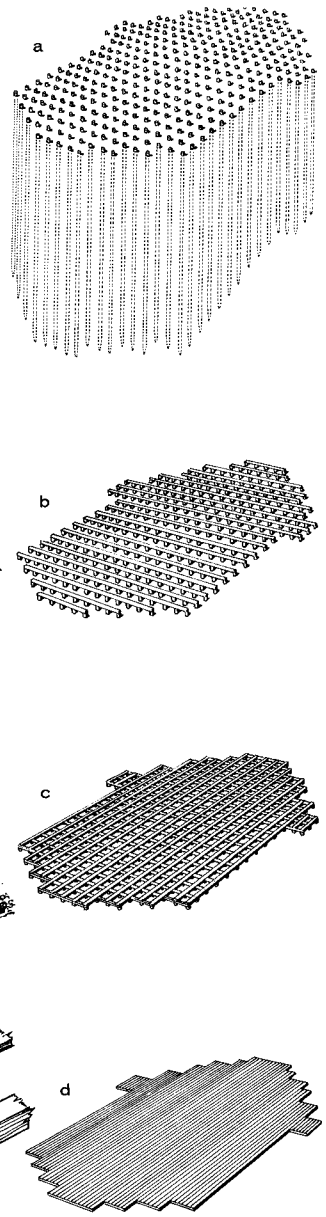
a. It required three years to complete the pile and grillage foundation. A literal forest of logs was driven into the Delaware mud, one to each 10-1/2 square feet of surface, some to a depth of 70 feet.

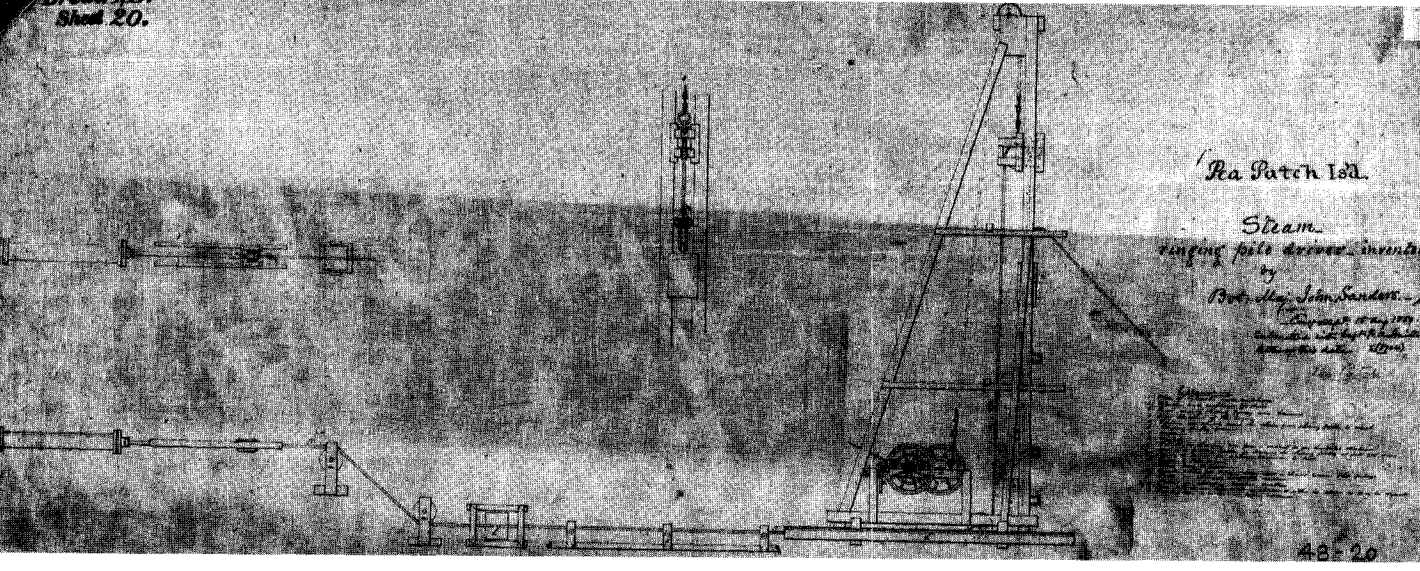
The piles were topped level; earth around pile heads was excavated to facilitate the cutting. Topping off was done by whipsaw after attempts to use a steam-driven circular saw were abandoned.

b. The lower tier of grillage was secured to the pile heads with oak treenails 18 inches long, two and one half inches in diameter.

c. Foot square timbers for the upper tier were notched and spiked to the lower tier at three and one half foot intervals, then earth was placed and rammed around the pile heads and grillage timbers.

d. Finally, four inch thick planks were spiked to the lower timbers, completing the smooth grillage platform upon which the masonry of the fort was erected.





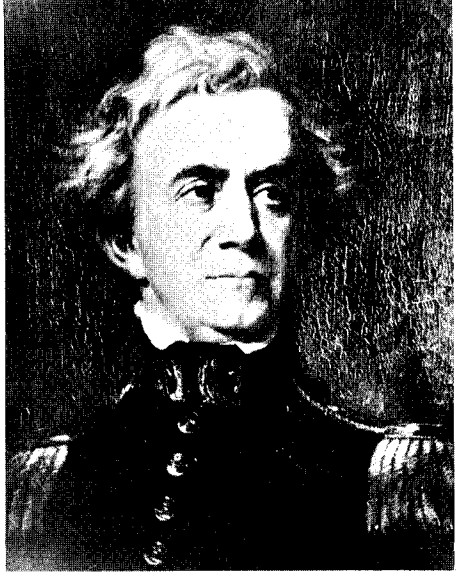
As superintending officer for the construction of Fort Delaware, Major Sanders exercised boundless curiosity and ingenuity in devising improved methods and systems for prosecution of the work. His schematic drawing of a "Steam ringing pile driver", shown here, was submitted to the Engineer Department in August, 1850. The device, capable of delivering 30 blows per minute with a 2,000-pound ram, was already in operation and would prove to be the most effective tool used in construction of Fort Delaware's foundation.

—National Archives

Major Sanders began driving piles 1 May 1849. The excavation was flooded to facilitate the work by floating the logs about and maneuvering the scow-mounted pile drivers. Logs 45 feet long of white oak and yellow pine were driven into more than 40 feet of mud and then a few feet into sand, using machinery left on the island by Captain Delafield eleven years previously. Overhauled and modified, the rigs proved adequate to the task. In October, with only 400 piles yet to be driven, Major Sanders began negotiations with Susquehanna timbermen for delivery of logs and planks for the grillage. Contracts would have to be drawn up speedily so that timber could be cut during the winter and floated down on the spring freshets. Fully anticipating an early completion of the pile-driving and confident of a new appropriation from Congress, Major Sanders strove to dovetail expeditiously all phases of the construction schedule. Stonecutters were already engaged in tooling face beds and joints on foundation stone.

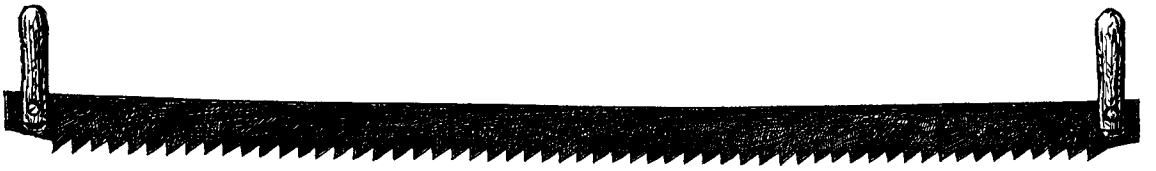
The most minute data were recorded for all pile driving operations and reported punctiliously to the Chief Engineer. On the other hand General Totten allowed no doubt of his determination to avoid a repetition of the Babcock foundation fiasco. The Totten-Sanders correspondence reveals a remarkable rapport between the two officers and an awareness by both that they were venturing on relatively uncharted terrain and might be held accountable for establishing precedent text. Many testing schemes were devised; some were tried with uneven results. Piles driven years before were observed to have extruded several inches; recently driven piles could be repunched to greater depths with a small volley of blows; others seemed to subside spontaneously. Sanders reported to his Chief: "The whole matter perplexes and embarrasses me. I wait with some solicitude for your views." It was decided, finally, to re-punch every pile in the foundation using a procedure which combined mathematical formulas of Poncelet[4] and Major Sanders' own innovation, the "ringing" pile engine. The tedious work required an additional 18 months. Up to three splices, each of ten-to-fifteen-foot lengths were required for the 1,594 piles which were punched to additional depths; some were driven to 70 feet.

Susquehanna timber contractors were allowed extensions of their delivery dates, their shipments having been delayed on account of



Major General Joseph G. Totten
—Corps of Engineers Museum, Fort Belvoir, Va.

Some equipment and materials left on Pea Patch Island when work was suspended in 1838 were found salvageable ten years later, when the new Fort Delaware was begun. Three of the four old steam engines were refurbished and put to work driving piles in the flooded foundation.
This conjectural view of the 1849 operations follows descriptions by Major Sanders in his reports to General Totten.

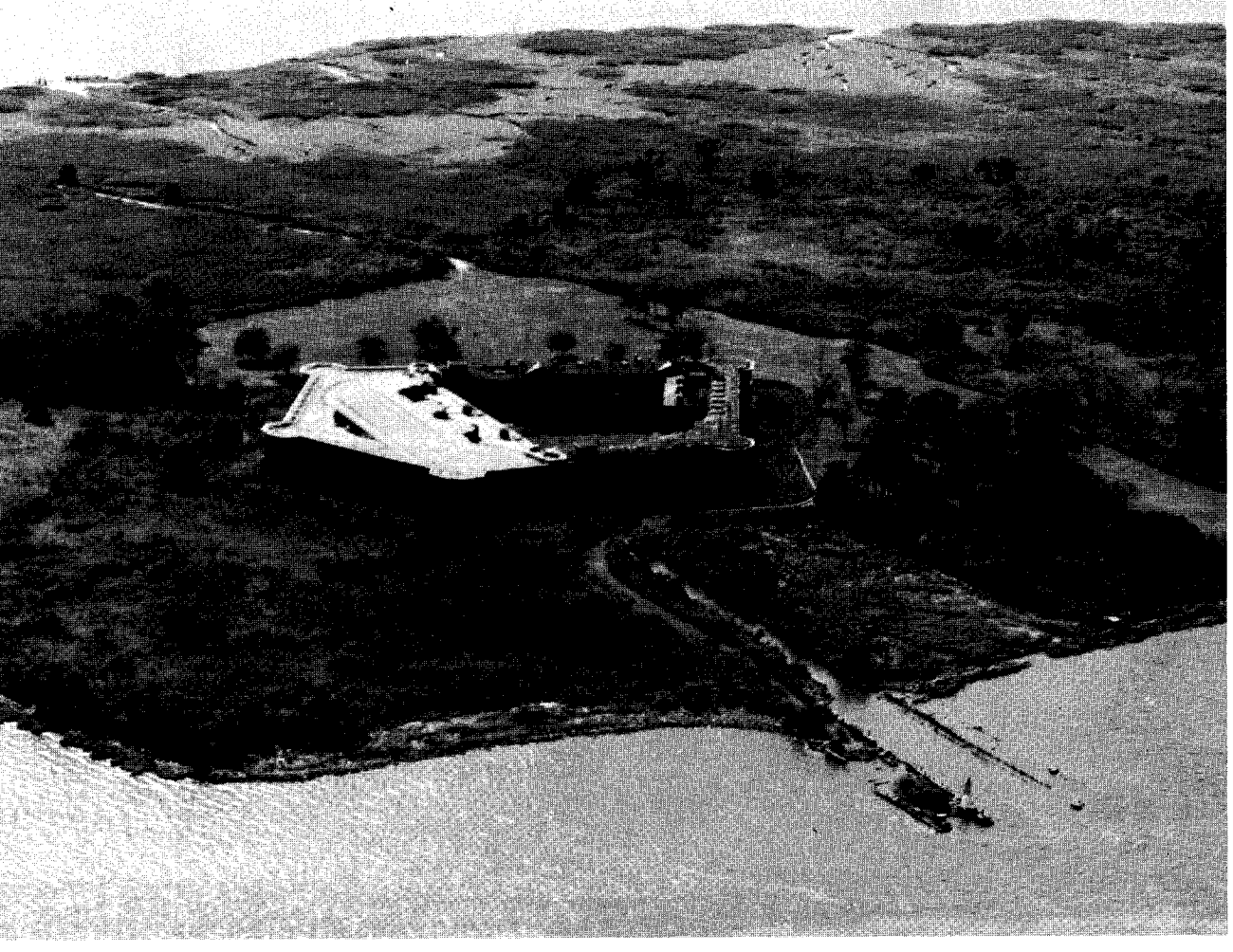


insufficient water in the river to float timber rafts. Several lockings of the 12" X 12" white pine grillage logs finally got through the Chesapeake and Delaware Canal and were towed out from Delaware City on 27 June 1851. By 25 August, James Given of Columbia and Bigler, Wright & Co. of Clearfield had delivered all the grillage timber and a large force of wharf builders was at work laying the lower tier. Earth was excavated around the pile heads to facilitate topping them off level by whipsaw. Backfill around the pile heads was Pea Patch mud, to the regret of Major Sanders, whose proposal to use concrete, or at least sand, was overruled.

The last planks of the grillage were spiked down on 14 May 1852, exactly three years after work was begun on the foundation. The whole plan of the fort was visibly defined by the compact wooden platform supported by more than six thousand piles and covering an area of almost four acres. Upon this substantial base lines were laid out for the masonry of the five fronts and bastions, using an instrument borrowed from Major Bache of the Topographical Engineers. The platform level stood at about low tide or seven feet seven inches below extreme high water, 1836 datum. Most of the piling had been exposed for several years to atmospheric action and Major Sanders decided to submerge the foundation, if the current session of Congress should not grant a substantial appropriation for continuation of the work. When reconstruction was resumed in 1848 there was an applicable balance of $20,000 in unexpended funds from the Delafield phase. Since then, to autumn 1852, three appropriations of $50,000 each had been made. Of this $170,000 total, more than $100,000 was expended on the foundation. At the closing of operations on 12 December 1852, remaining expendable funds were $9,500. Major Sanders took up residence in Philadelphia at Mrs. Levely's and rented the director's room of the Philadelphia Library for his office.

Congressional fact-finding activities[5] produced favorable results late in the session and with the new appropriation Major Sanders was back on Pea Patch Island in April, 1853. The foundation was pumped out and the grillage platform readied for the stone masons. Thirty stone cutters shaped the blocks left exposed on the island 15 years before. The Quarryville stone worked up readily, but 1,200 blocks of Port Deposit gneiss, "very hard and of a firm and durable quality—seems to have been quarried contrary to its natural bed — is easily as hard as iron; the best workmen so far only cut one superficial foot an hour." Cement came by schooner in barrels by the outside route from New York; deliveries were sporadic and one 500-barrel lot contained such quantities of adulterants as to be unusable. Despite the reverses, nearly all the Delafield Quarryville stone was set before frost, sufficing to build the scarp wall to the six-foot reference line or first offset, containing about 8,000 cubic yards of masonry.

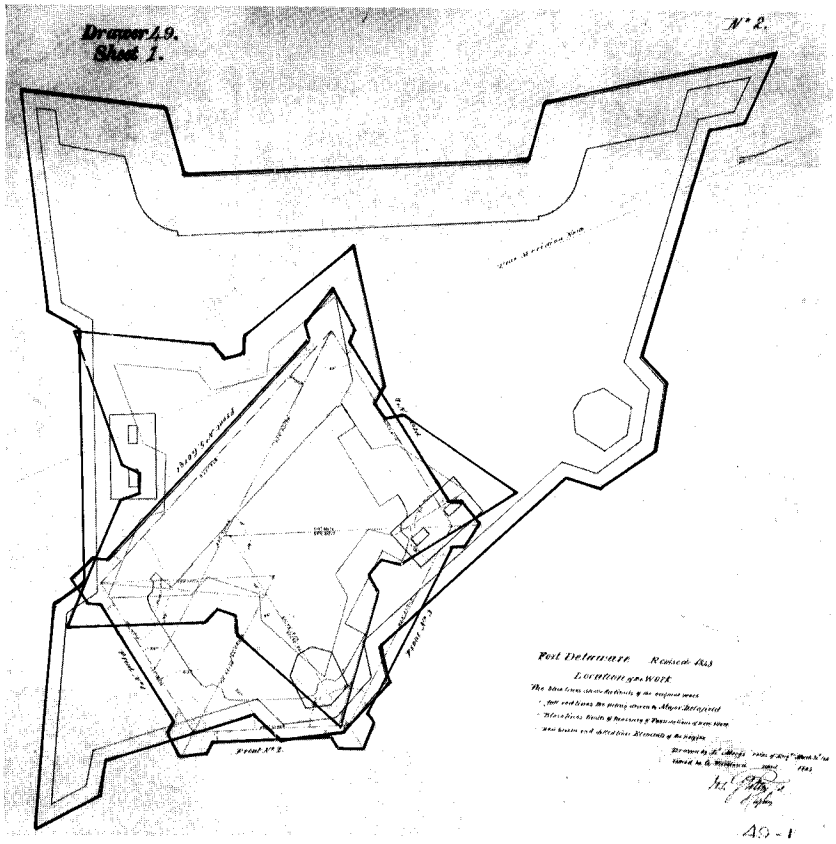
The population of Pea Patch Island then numbered over 200 persons, including Major Sanders and his two assistants, Lieutenants Morton and Casey.[6] Residency on the island was continuous — no commuting to the mainland. With the large force, maintenance of public health became a matter of urgent concern, especially since in 1850 the War Department had issued regulations prohibiting



1960 view westward across Pea Patch Island, showing Fort Delaware at age 100 years. In the foreground may be seen remnants of the peripheral revetment, eastern wharf and jetties. The southern half of the fort (light area) is much altered from the original design by addition of 12-inch gun emplacements and ammunition storage, installed in 1898. The marshy, desolate character of the island is apparent.

the supply of medical assistance to civilian personnel at government expense. Major Sanders' request to rescind the regulations and provide authorization for employment of a resident physician was swiftly acted upon and within 20 days Dr. Hamilton of Delaware City was under contract as the Post Medical Officer. It took two years to get the four-bed hospital started; quarters provided by the Post Commander were furnished and stocked with medicines by the mechanics and laborers, organized as the Fort Delaware Employees Mutual and Sick Fund. Workmen's contributions were disbursed on such items as "Paid to Brookfield who fell from crane and broke his arm $10.00; "For funeral expenses of Patrick Powers who died in hospital $23.55" and "$5.00 for relief of Timothy Collins," who was just a little short between paydays.

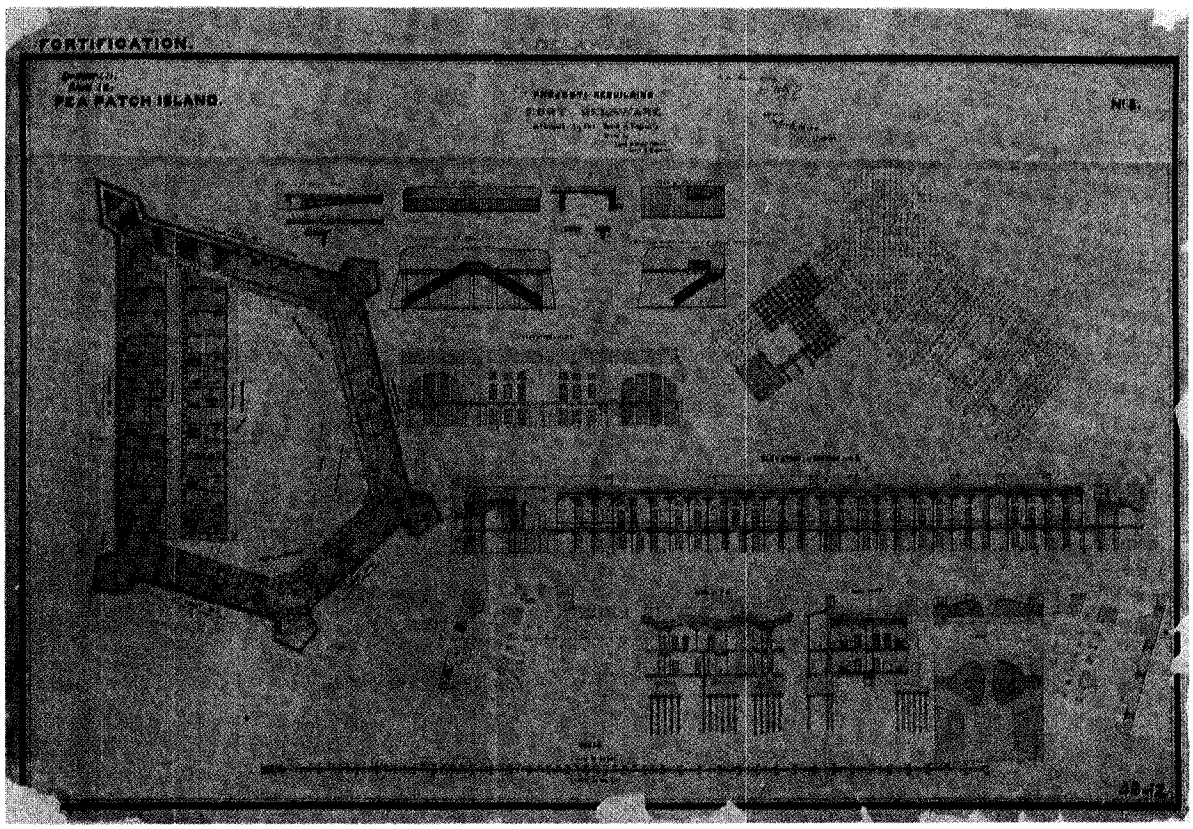
Considering the communication facilities available at mid-nineteenth century, it is understandable that Pea Patch Island was regarded as a remote post. Access to the river's shores was solely by means of rowing and sailing boats across a mile in either direction of frequently turbulent water. In winter high winds and floating ice made the crossing impossible for several days in succession. There was a telegraph office in New Castle, and a bank in Delaware City, "which city is in fact a very small and unimportant village." Steamboats ran between the coastal ports, making stops at Pea Patch Island on the



Location of the Work—1848

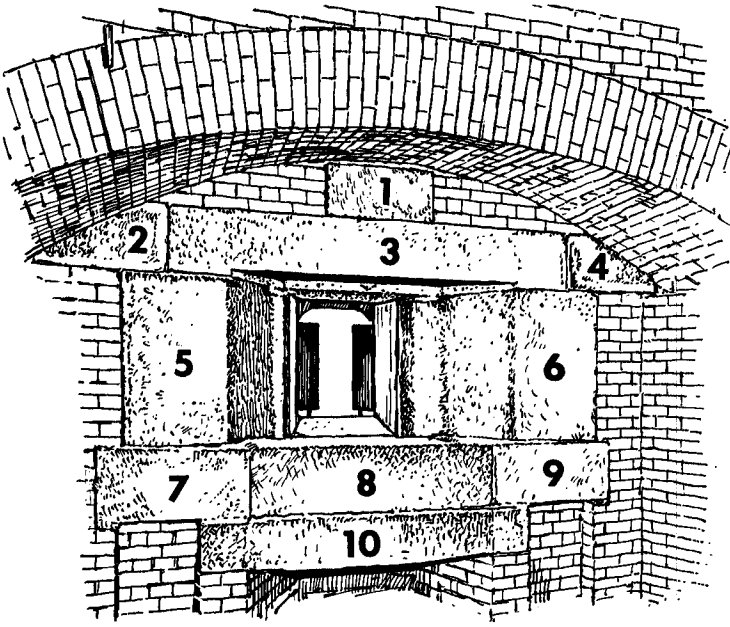
Three superimposed plans show the relationship of the various fortifications attempted on Pea Patch Island. Blue indicates the limits of the Star Fort begun in 1817 and destroyed by fire in 1831. Captain Delafield's plan — red outline — was laid out in 1833, construction was suspended in 1838. The pentagonal plan (shaded line) overlaps elements of both previous works and is the final shape of Fort Delaware built between 1848 and 1861. Drawn by Lt. Meigs.

—National Archives



Fort Delaware as designed by the Board of Engineers was signed by the new Chief Engineer, Lt. Col. Totten and approved by the Secretary of War, William Wilkins. This pentagonal plan emerged in 1839, the year after construction of Delafield's fort was suspended. The draftsman was Lt. H. Wager Halleck, who later earned distinction as a combat officer in the Civil War.

—National Archives



Major Sanders reported on construction of the gun embrasures in June, 1856. Of the ten stones required for each embrasure, all but three were wrought from blocks of Quarryville granite which had originally been prepared for construction of Brandywine Shoal Light. Lintels (3) and cheekstones (5 and 6) were ordered from Vinalhaven, Maine. Embrasure irons were furnished by Parrott's West Point Foundries at $450 per set. The cost of a complete embrasure was $874.

inside run to and from Philadelphia; a line of steam packets transited the Chesapeake and Delaware Canal on a day and night schedule between Philadelphia and Baltimore. Cement, purchased in New York and consumed at the rate of 80 barrels a day, was shipped in coasting schooners for a four-day trip (weather favorable), or in barges via the Delaware and Raritan Canal in five to six days.

The working day at Fort Delaware was ten hours long and was calculated in days and tenths of days. Laborers received $1.00 a day; mechanics $2.00 to $2.50 a day; clerks and draftsman, $80.00 and $90.00 per month respectively; and the physician, $86.00 or less, depending on the size of the work force. Base rates were paid for all work performed until, in 1856 Major Sanders requested that the Department establish an official working day limited to ten hours and payment of time and a-half for overtime. The men were paid monthly in gold and silver specie, sums being withheld from those who boarded at the laborer's mess and handed over to the boarding master. Initially, the Commandant drew a check for the monthly payroll and exchanged it for gold and silver at the Delaware City Bank. By June, 1855 the payroll was up to $10,500 for a force of 297 men. Nine denominations of coin from 3 1/2 cent pieces to double eagles overtaxed the small Delaware City Bank's facilities; this and subsequent payrolls were drawn on the Philadelphia Mint and delivered to the work site by an Adams Express Co. courier for two dollars a thousand.

The middle fifties were good years in the land; immigrants poured in to get a share of the prosperity. Jobs abounded in every category and Major Sanders sought the most skilled mechanics available. His work list included German wharfbuilders, ships carpenters from the Liverpool docks, a lock builder from the Delaware and Raritan Canal and a roll call of laborers which reads like the County Cork census. To insure retention of this crack crew, the highest current pay rates were obtained and work was offered for the winter months, when some categories ordinarily would have been shut down. Stone cutters were kept on at piece work; carpenters building new shops; smiths making wheelbarrows and repairing machinery. Before frost in the fall of 1854 the scarp wall was raised to nine feet, eleven inches, three courses above the bench course at the six-foot reference. Fifty to sixty laborers toiled throughout the winter and spring to build up the parade ground, hauling by horse and ox cart the mud of the river excavated at low tide and the mounds of earth which Captain Delafield's excavation had thrown up in digging the ditches.

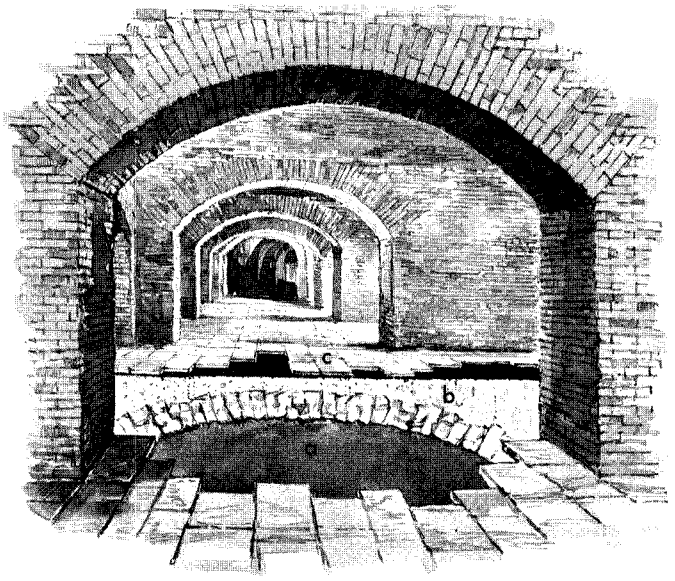
Behind the stone scarp the wall mass was constructed of rubble concrete, into which

was cast the considerable remnant of the obdurate Port Deposit stone. Behind the rubble came the brickwork; casemate piers and arches, barracks and parade wall. Bricks were ordered in lots of 20 to 30 thousand each from a dozen suppliers in Wilmington, Chester and Philadelphia. Stone masons were setting one course of stone per month or 1,500 running feet of wall; the exclusive output of John Leiper's Quarries[7] was engaged until September. Besides the granite stretchers and headers for much of the scarp wall, Leiper's Quarries furnished "white stone" lintels and fine blocks for the unique circular staircases. Some of the handsome dressed granite blocks used to build the sally port and postern gates came from Quincy, Massachusetts; Quincy granite and other granites of superior quality were wrought for gun embrasures, lintels and coping. Quarries at Vinal Haven, Maine worked out large slabs of "platform stone" for Fort Delaware's tower stairs and the Lighthouse Board transferred title for 673 blocks of superb Quarryville granite which had been cut and dressed for use in building Brandywine Shoal Light. The stone had laid for many years at the quarry accruing ground rental, unused because of a design change.

In his annual report of 1855 Major Sanders forecast the Fort's readiness for armament and garrison by autumn 1858, depending necessarily on provision of appropriate funds. At a point midway in construction the work picked up momentum and its strategic significance began to capture the public's interest. Tangible evidence of a well-wrought project kept the Congress in a mood to see the job through. Most of the nagging problems had been resolved; periodic readings at established benches showed no subsidence of the structure, although some alarm was caused by the results of a typical foundation compression test.[8] In closing his report Major Sanders warned against letting the public have the impression that "this work as now building will, when finished suffice for the defense of the passage up the Delaware."

From November 1856 to June 1857 Major Sanders was absent from Fort Delaware on assignment to Fort Taylor at Key West, Florida. Levellings taken that summer began to show subsidence, especially on the southern flank, where it had gone down nine-tenths of an inch. Efforts to repair the leaky cisterns were postponed to await completion of the fort and, hopefully, culmination of the structure's settling. The Major expressed his despair of "this mud island, upon which there is no stability."

Pea Patch Island consisted of less than 80 acres of fast land which at this time of peak activity confined the lives of more than 300 people, some of them children. The Commandant was the community leader and guardian as well as first officer of the post and paymaster. Maintenance of discipline among workers and overseers, arbitration of differences and preservation of morale and the

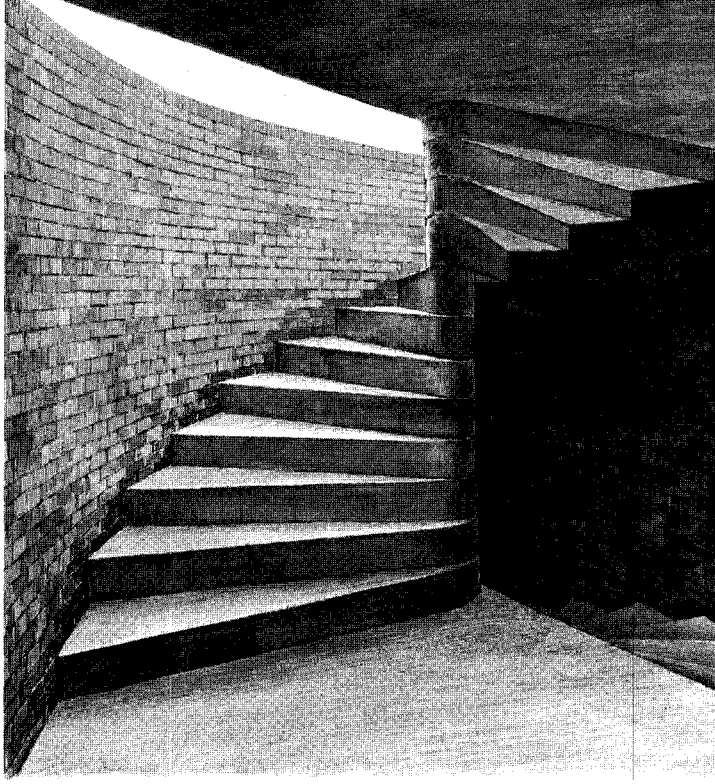


Lower tier flagging was originally to be laid directly on the earth; Major Sanders substituted this more substantial method:

a. Using the mud as centering, an arch was built of stone unfit for fine cutting.

b. The arch was filled level with rubble concrete.

c. The flagstones were set in "asphaltic mastic".



Circular stairways, located in the parade end of the bastions, gave access to second tier casemates and the ramparts. The simple design was executed in circular brick wells using wedge-shaped stones from Lieper's quarries for the steps and large platform stones from Vinal Haven, Maine.

general health were some of his more paternalistic duties. A special order strictly enforced between May and September required the summary execution of any dog running at large on the island without a muzzle. An Engineer Order dated 28 June 1858 authorized and established a school for the children of Pea Patch, assigning Miss Louisa Gribble as teacher. No patriarchal handout, contributions for tuition were required of the parents of participating children. Many letters from the Commandant to the Chief in Washington are filled with concern for the people in his charge; frequent in praise of their skill and dedication and ardent in petitions for increasing their wages.

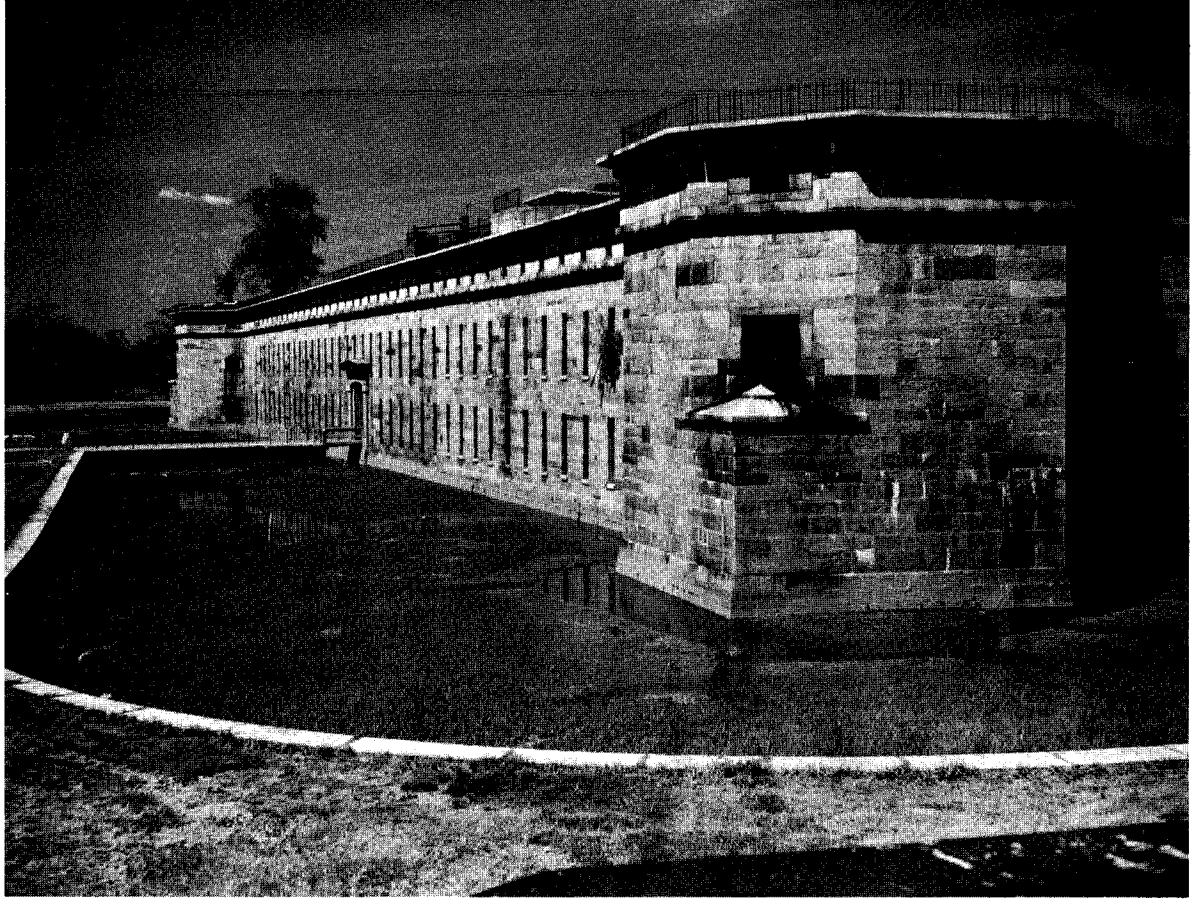
Colonel Richard Delafield, superintendent of the Military Academy, convened a Special Board of Engineers to meet at West Point on 21 July 1858. The meeting date was postponed one week at the request of Major Sanders, a member of the Special Board, whose indisposition prevented attendance on the original date. On the 20th the Major again asked to be excused. His constitution weakened by diabetes, Sanders had suffered continually since his assignment as project engineer on the island. On 13 July 1858, Sanders wrote that he had "already been confined to the house for a fortnight by a carbunculous boil," which showed no signs of healing. His letters began to ramble. On 29 July 1858 Brevet-Major John Sanders died in his quarters on Pea Patch Island, of carbunculous boils terminating in erysipelas, more than ten years and five months after beginning the reconstruction of Fort Delaware. In the official dispatch Clerk Muhlenbruch wrote: "As Major Sanders attended to his public duties during the whole of his sickness the progress of the work was not in the least impeded, only today the workmen declined working, the sad event being expected since last night."

Sanders left a widow and seven children. In 1860-61, Mrs. Sanders petitioned Congress for a pension, but the War intervening, her request was not granted until 24 February 1876, when she was awarded a pension of thirty dollars per month, amended however to read "from the approval of this act," rather than the original retroactive date of 1 March 1861.

Lieutenant Craighill[9] commanded operations until the arrival of Captain John Newton[10], who assumed the superintendence of Fort Delaware in October 1858. The estimated date of readiness for guns, garrison and supplies was set at 30 June 1860. With enough money and a month's notice an emergency basis operation could be set up to quarter 1 1/2 to two regiments and mount the complete armament of 156 guns of large calibre, 91 in the bomb proof casemates and 65 firing over the top of the wall. Money was scarce, appropriations small; from here on until the end of construction there would be a zero balance on the fiscal report, which would also show sums advanced out of fortifications contingency funds.

Fine stone was sought from many sources by Chief Engineer Totten for construction of the Nations' greatest fortress. The granite blocks for the sally port were quarried in Quincy, Massachusetts.

In a letter to General Totten dated Aug. 11, 1855, Major Sanders wrote: ". . . unless kitchens are furnished with ranges, officers will have to buy cookstoves which require no fireplaces; nowadays there are no cooks who can cook in open fireplaces". This officers' kitchen in restored Fort Delaware was furnished by the Fort Delaware Society.

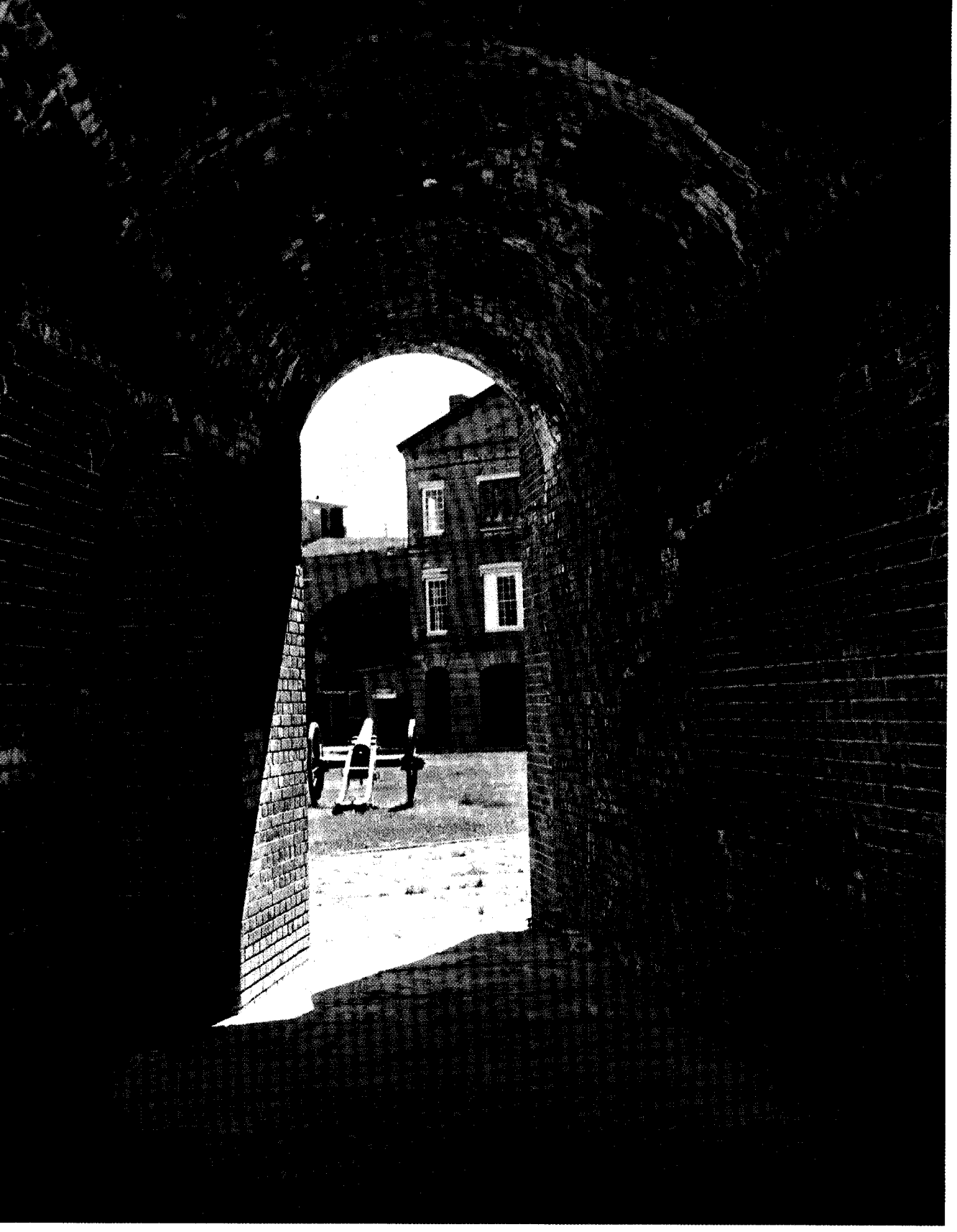


In Fort Delaware's twelfth decade, marsh grass chokes the moat and trees flourish on the ramparts, but the masonry shows signs of only minor subsidence. The superb mitering of the stone work is observable in this view of Front 5, with the permanent bridge, drawbridge and sally port. The State of Delaware and the Fort Delaware Society have begun restoration of the fort as a military museum.

The questions of hiring an *applicateur* to direct the preparation and application of "mastic" or asphaltic tar to roof surfaces, first arose in late 1857, when Lieutenant A.A. Gillmore, Resident Engineer in New York, wrote to Major Sanders, suggesting that such a man was available for the purpose. Sanders put him off, replying that his master bricklayer could handle the work, that no tar specialist was needed. After Sanders' death, Lieutenant Gillmore wrote to Major Newton, the new project officer, again recommending that the *applicateur* be engaged. Newton relented, and agreed to hire the fellow, a Frenchman named Coeur de Vache, at sixty dollars per 26 day month, 10 hours a day.

The work progressed at a steady pace; Newton soon had to request Gillmore to send him an additional *applicateur*, one Auguste Keller, whom Coeur de Vache had recommended. But all was not well. The little Frenchman was becoming homesick, and periodically threatened to pick up and return to France. Newton curtly ". . .informed him that he had the power of transporting his person, where he might desire, subject, however, to the penalty of forfeiting, by breach of contract, all monies due him." This seemed to quieten Coeur de Vache, who remained at his work through September of 1860, excepting a temporary reassignment to work on the fortifications at Key West, Florida, from November 1859 - May 1860. At his departure, Newton recognized that, despite their differences, the temperamental Frenchman had been ". . .the best *applicateur* I have employed, since I have been in the Corps."

In the spring of 1859 all construction activities were suspended except those which directly advanced the preparations to receive



A glimpse of the parade ground, viewed from a lower tier casemate. Flagstone was shipped from quarries on the Hudson River; bricks were supplied by a dozen manufacturers in Philadelphia, Chester and Wilmington. Major Sanders paid higher than average wages to keep expert workmen on the island. In October 1857 he wrote: "I will venture the assertion that there is no other public structure in the United States where more solid and permanent work has resulted from a proportional outlay".

armament. Cost to date since March 1848 for rebuilding Fort Delaware was $950,622.73. The sum required for completion was estimated at $354,848.96 for an estimated total cost of $1,305,471.69. A bill of ordnance was forwarded with recommendations for early completion and delivery. By January, 1861 the fort was ready for guns. In Captain Newton's opinion ALL guns should be sent — "The Fort should be prepared to the full extent — because civil war will likely lead to foreign war."

A week after Sumter it seemed highly probable that Delaware would follow the example of Maryland and that both states would secede from the Union. It was feared that attempts to cripple the fort would be made from a hostile Delaware shore. Plans to raze the upper sections of barracks and officers' quarters, visible from outside the fort, were eventually abandoned. Work went forward on a temporary wooden barracks in the parade ground to accommodate 350 men and 15 officers. At this time the garrison numbered 20 men; reinforcement by regulars through the only open channels, Philadelphia and New York, was effected at the end of April. Captain Newton reported the condition of the fort on 30 June 1861 as "now in fighting order as far as partial armament extends." Forty-seven guns had been mounted: 20 flank howitzers; eight eight-inch Columbiads in the second tier; five ten-inch and 14 eight-inch Columbiads in the barbette. The permanent bridge was built and the draw worked admirably. Temporary quarters were adequate for the garrison; the bakery was completed, but shot furnaces for the 42-pounders had not been begun. Captain A.A. Gibson, commanding the fighting units, complained of the medical facilities, which still consisted of a civilian physician and a small cooperative hospital. Medical operations were put on a war footing by the Surgeon General and the last of Fort Delaware's civilian medics, Dr. George W. Webster was discharged in December, 1861.

Engineer Captain Newton's final tally sheet listed the following items as still to be done: stop leaks in the cisterns of front five; complete the drainage system of the parade ground; finish construction and fitting out of the permanent barracks and officers quarters and repoint some of the copings. Outside the fort the glacis and counterscarp were unfinished and there was need for a permanent western wharf, higher jetties and two new permanent sluices. But the events of war made a drastic revision in the fort's intended mission. When construction was resumed its purpose was to erect shelters for prisoners of war, who were brought to Pea Patch Island in thousands. The greatest fortress in the land became one of the largest and most infamous prisoner detention camps in the war between the states, "the Andersonville of the North." The tally of prisoners held on the island reached a war-time high of 12,595 in July, 1863. By war's end disease, deprivation and damp had claimed over 2,700 of them. The fortress itself stood silent. Though more armament was mounted and the alert for ironclads maintained, the guns of Fort Delaware never fired a hostile shot.